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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/631,131 | 07/31/2003 | Laurel H. Carney | 156 P 023 | 2472 |
| 28264 | 7590 | 04/11/2005 | EXAMINER | |
| BOND, SCHOENECK & KING, PLLC ONE LINCOLN CENTER SYRACUSE, NY 13202-1355 | | | NATALINI, JEFF WILLIAM | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2858 | |

DATE MAILED: 04/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

11-A

| | | | |
|------------------------------|-------------------------------|-------------------------------|--|
| Office Action Summary | Application No. 10/631,131 | Applicant(s) CARNEY ET AL. | |
| | Examiner Jeff Natalini | Art Unit 2858 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 February 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Specification

1. The disclosure is objected to because of the following informalities:

- In our system it states that the present application claims priority to two provisional applications, 60/400359 and 60/400357 both filed 7/31/02.

These both correspond the application as filed, previously submitted was a new specification that inserted that priority is claimed to only provisional application 60/400347 that is filed by complete different inventors.

Please fix the specification to claim priority to both of the provisional applications listed above (60/400359 and 60/400357).

Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 1 is rejected under 35 U.S.C. 103(a) as being obvious over "A New Angle on Detection: A Physiological Model for the Detection of Tones in Noise", by Carney et al. (herein to be referred to as Carney et al.) in view of Rainton (5724485).

In regard to claims 1 and 2, Carney et al. discloses a system for detecting a signal having a target frequency (introduction paragraph) comprising: a first filter having a first center frequency and a first transfer function, wherein said first center frequency

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is greater than said target frequency (figure of phase vs frequency on pg 1 shows a first filter having a center frequency lower than the target frequency of 900Hz); a second filter having a second center frequency and a second transfer function, wherein said second center frequency is less than said target frequency (figure of phase vs frequency on pg 1 shows a second filter having a center frequency higher than the target frequency of 900Hz) and wherein the phases of said first and second transfer functions differ by 180 degrees about said target frequency (last sentence on pg 1).

Carney et al. lacks wherein a running cross-correlator is interconnected to said first and second filters for comparing first and second transfer functions over time;

Rainton teaches a running cross-correlator interconnected to said first and second filters (fig 1- Cross-correlator (13), filters (11 and 12)) for comparing first and second transfer functions over time (abstract; transfer functions are taken into account as they represent the discriminant function).

It would have been obvious to one with ordinary skill in the art at the time the invention was made for Carney et al. to have a cross correlator interconnected to first and second filters for comparing first and second transfer functions of the filters over time as taught by Rainton in order to minimize the discriminant function (abstract).

4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Carney et al. in view of Rainton (6031862) as applied to claim 1 above, and further in view of Fullerton et al. (6031862).

Carney as modified lacks wherein the running correlator comprises a cross-correlator having a predefined integration time interconnected to a low pass filter having a frequency that is inversely proportional to the integration time of said cross-correlator.

Fullerton et al. teaches a running cross-correlator having a predefined integration time interconnected (col 17 line 39-45) to a low pass filter (fig 224- Cross-correlator (1408), low pass filter (1428); col 17 line 52-57) having a frequency that is inversely proportional to the integration time of said cross-correlator (col 9 line 60-66).

It would have been obvious to one with ordinary skill in the art at the time the invention was made for Carney as modified to incorporate a cross-correlator having a predefined integration time interconnected to a low pass filter having a frequency that is inversely proportional to the integration time of said cross-correlator as taught by Fullerton et al. in order to detect the received signal in a communication device (col 3 line 47-49).

5. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carney et al., Rainton (5724485), and Fullerton et al. (6031862) as applied to claim 2 above, and further in view of Minto (5757641).

In view of claims 3 and 4, Carney et al. and Fullerton et al. lack first and second non-linearities interconnect first and second filter to the cross-correlator; wherein the non-linearities are signum functions.

Minto discloses that each filter comprises a signum function coupled to it (fig 3 (147-filter) (143-signum function)), in order to perform the computation converting each

signal to a (+1), (-1), or zero, thus performing a non-linear function to the signal (col 5 line 28-42).

It would have been obvious to one with ordinary skill in the art at the time the invention was made for Carney et al. and Fullerton et al. to have a signum function perform a non-linear function on the output of each filter as taught by Minto in order to receive the local channel residual error signal (col 5 line 28-31).

6. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Carney et al. in view of Rainton (5724485) and further in view of Minto (5757641) and further in view of Franklin et al. (4363138).

In regard to claims 5, Carney et al. discloses a method for detecting a signal having a target frequency in noise (introduction paragraph) comprising: a first filter having a first center frequency and a first transfer function, wherein said first center frequency is greater than said target frequency (figure of phase vs frequency on pg 1 shows a first filter having a center frequency lower than the target frequency of 900Hz); a second filter having a second center frequency and a second transfer function, wherein said second center frequency is less than said target frequency (figure of phase vs frequency on pg 1 shows a second filter having a center frequency higher than the target frequency of 900Hz) and wherein the phases of said first and second transfer functions differ by 180 degrees about said target frequency (last sentence on pg 1).

Carney et al. lacks processing the outputs of the filters with saturating non-linearity component that is a signum function; running cross-correlator is interconnected

to said the output of the non-linear output; and determining if the signal is present when said running cross-correlation drops below a predetermined threshold.

Minto discloses that each filter comprises a signum function coupled to it (fig 3 (147-filter) (143-signum function)), in order to perform the computation converting each signal to a (+1), (-1), or zero, thus performing a non-linear function to the signal (col 5 line 28-42).

It would have been obvious to one with ordinary skill in the art at the time the invention was made for Carney et al. to have a signum function perform a non-linear function on the output of each filter as taught by Minto in order to receive the local channel residual error signal (col 5 line 28-31).

Rainton teaches a running cross-correlator interconnected to said first and second filters (fig 1- Cross-correlator (13), filters (11 and 12)).

It would have been obvious to one with ordinary skill in the art at the time the invention was made for Carney et al. to have a cross correlator interconnected to first and second filters and would be after the non-linearities as from the teaching of Minto (above) for comparing first and second transfer functions of the filters over time as taught by Rainton in order to minimize the discriminant function (abstract).

Franklin et al. discloses a threshold detector that connected to the output of a cross-correlator (fig 2 (28-cross-correlator) (29-threshold detector)) and will be able to recover the signal by comparing the output of the cross-correlator to the threshold value (col 5 line 10-19; it is known in the art the original signal would have a lower value after cross correlation therefore be detected when under the threshold value).

It would have been obvious to one with ordinary skill in the art at the time the invention was made for Carney et al. to use a threshold detector to determine the original signal when the cross correlation drops below a threshold as taught by Franklin et al. in order to minimize false alarm probabilities (col 3 line 25-27).

7. Claim 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carney et al., Rainton (5724485), Minto (5757641), Franklin et al. (4363138) as applied to claim 5, and further in view of Fullerton et al. (6031862).

In regard to claim 6, Carney as modified contains as stated above.

Carney as modified lacks wherein the running correlator comprises a cross-correlator having an integration time determined by a low pass filter.

Fullerton et al. teaches a running cross-correlator interconnected to said first and second filters (fig 24- Cross-correlator (1408), low pass filter (1428); col 17 line 39-45); wherein the running correlator comprises a cross-correlator having a integration time determined by a interconnected low pass filter (fig 224- Cross-correlator (1408), low pass filter (1428); col 17 line 52-57).

It would have been obvious to one with ordinary skill in the art at the time the invention was made for Carney as modified to incorporate a cross-correlator having a predefined integration time interconnected to a low pass filter as taught by Fullerton et al. in order to detect the received signal in a communication device (col 3 line 47-49).

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In regard to claim 7, Carney as modified contains processing said first and second outputs with a saturating non-linearity is performed by a signum function (see above):

Minto discloses that each filter comprises a signum function coupled to it (fig 3 (147-filter) (143-signum function)), in order to perform the computation converting each signal to a (+1), (-1), or zero, thus performing a non-linear function to the signal (col 5 line 28-42).

Response to Arguments

8. The applicant's arguments with respect to claims 1 and 5 have been considered but are moot in view of the new ground(s) of rejection, though one argument would not be considered moot and is addressed below.

This applies to applicant stating there is a serious question whether Carney actually discloses the claimed filters. In this statement applicant admits "Carney discloses two 180 degree out of phase auditory nerve simulating filters having center frequencies around the tone to be detected". This admittance is what examiner had understood and used to reject the claim. Applicant argues that Carney does not disclose first and second filters having first and second center frequencies to detect a target frequency, this it is noted is not how the claim reads. Examiner in to interpret the claim in the broadest sense and it is claimed in the preamble the system as a whole *detects a signal* having a target frequency.

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The applicant's arguments with respect to claims 1 and 5 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff Natalini whose telephone number is 571-272-2266. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lefkowitz can be reached on 571-272-2180. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jeff Natalini



**ANJAN DEB
PRIMARY EXAMINER**